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Citation for published version:

Hall, NF & Gale, CR 2002, 'Prevention of age related macular degeneration', *British Medical Journal (BMJ)*, vol. 325, no. 7354, pp. 1-2. <https://doi.org/10.1136/bmj.325.7354.1>

Digital Object Identifier (DOI):

[10.1136/bmj.325.7354.1](https://doi.org/10.1136/bmj.325.7354.1)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Publisher's PDF, also known as Version of record

Published In:

British Medical Journal (BMJ)

Publisher Rights Statement:

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Prevention of age related macular degeneration

Current evidence suggests that vitamin E alone is unlikely to have a large protective effect

Papers p 11

Age related macular degeneration may be recognised in its early stages by the appearance of drusen and pigment change within the retina, but it produces few symptoms. Progression of age related macular degeneration can result in irreversible visual loss and is the commonest cause of blindness in the Western world. New treatments such as photodynamic therapy and macular surgery may limit the extent of visual loss and in a few cases even restore sight.¹ But in contrast with cataract surgery, outcomes are unpredictable and the treatment is burdensome for patients and carries massive resource implications for healthcare providers. The prospect of prevention is thus very appealing from the public health perspective, not to mention that of the patient who may be at risk of losing the ability to recognise faces, read a newspaper, or to live independently. Increasing evidence suggests that cumulative oxidative damage increases risk of age related macular degeneration.² But evidence from trials and reviews suggests that the antioxidant vitamin E, used alone, does not seem to have a protective effect against age related macular degeneration.

The retina is particularly susceptible to oxidative stress as its need for oxygen is large, it is exposed to high levels of light, and its membranes are rich in readily oxidised polyunsaturated fatty acids. Evidence from in vitro and animal studies suggests that the antioxidants vitamin E and vitamin C can protect the retina against photochemical damage. Carotenoids also have antioxidant properties and two of these, lutein and zeaxanthin, make up the macular pigment that is thought to limit retinal oxidative damage by filtering out blue light. However, results of observational studies linking intake or blood levels of antioxidants with risk of age related macular degeneration have been inconsistent.³⁻⁷ Over the past decade or so, several randomised controlled trials have been set up to try to resolve the uncertainty about the role of antioxidants.

In this issue Hugh Taylor and colleagues report the findings of one such study (p 11).⁸ The vitamin E, cataract and age-related macular degeneration study (VECAT) was set up in Melbourne, Australia, in 1995. One aim of the study was to determine whether vitamin E supplementation (500 IU/day) would influence the development and progression of age related macular degeneration. Most of the 1193 study participants had no or mild signs of age related macular degeneration at the start of the study. After four years, there were no statistically significant differences

between the intervention and the placebo groups in the primary outcome, incidence of early age related macular degeneration, or in any of the secondary outcomes, progression of early age related macular degeneration, development of late age related macular degeneration, changes in visual acuity, or changes in visual function. Set against the results of a recent cross sectional observational study that found statistically significant inverse associations between plasma vitamin E and both early and late age related macular degeneration,⁷ these findings are disappointing.

One explanation, as Taylor et al point out, may be that four years of supplementation is too short for any protective effect to be detected. The lowered risk of age related macular degeneration linked with high intakes or blood levels of antioxidants in some observational studies could reflect a lifelong pattern of eating. Another possibility is that the baseline antioxidant status of the trial participants was too high for supplementation to be effective: plasma vitamin E levels were near the top of the reference range for both treatment groups, and over 25% of participants had been taking supplementary vitamin E before the trial. Thirdly, this trial was originally set up with the statistical power to detect a 15% reduction in cataract; although, as the authors state, the sample size may have been adequate to detect a 50% reduction in the incidence of age related macular degeneration, it may have been unrealistic to expect vitamin E to have such a large effect. If they had wanted to have 80% power to detect a 20% reduction in incidence, which seems a more likely goal, they would have needed a sample size over eight times larger than that available.

It may be, of course, that vitamin E has no role in preventing age related macular degeneration. Results from a Finnish trial showing that neither vitamin E nor β carotene, nor a combination of these antioxidants, had any effect on risk of age related macular degeneration in 941 male smokers supports this view, though this study too may have lacked statistical power.⁹ However, a trial from the United States with 3640 participants was able to show that vitamin E, in combination with vitamin C, β carotene and zinc, reduced risk of progression to advanced age related macular degeneration by 25% after six years in those already showing evidence of disease.¹⁰ It was not possible to examine the effect of vitamin E alone.

Two Cochrane reviews, which took account of the preliminary report of this trial, conclude that there is

currently no evidence from randomised trials that healthy people should take antioxidant vitamin supplements to prevent the onset of age related macular degeneration.¹¹ However, the authors suggest that on the basis of the US trial an antioxidant and mineral supplement containing vitamin E, vitamin C, β carotene, and zinc may delay the progression of the disease in people with moderate to severe age related macular degeneration.¹² On current evidence it is unlikely that vitamin E alone has a large protective effect.

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Detaining dangerous people with mental disorders

New legal framework is open for consultation

The draft mental health bill published last week introduces a new legal framework for the compulsory treatment of people with mental disorders in hospitals and in the community.¹ On the day it was unveiled the bill was condemned and labelled as little more than a detention plan for dangerous mental patients.² The white paper on reforming the Mental Health Act that preceded the draft bill attracted a great deal of attention because of its over-riding emphasis on public safety.³⁻⁵ The fact that it was not well received is hardly surprising given that it was born from an unpopular green paper and proposals for managing dangerous people with severe personality disorder described as glaringly wrong and unethical.⁶⁻¹⁰

Rather than continuing the theme of public protection,³ the ministerial foreword accompanying the draft bill seeks to reassure us that the new law will promote patients' rights and protect them.¹¹ The term "dangerous people with severe personality disorder" used in the white paper does not receive a single mention in the draft bill. This may offer some reassurance, but it does not mean that dangerous people with personality disorders or any other forms of mental disorder are excluded—far from it.

The procedure for compulsion is very similar to that described in the white paper. This involves a single pathway with three distinct stages: a preliminary examination, a period of formal assessment lasting up to 28 days, and then treatment under a Mental Health Act order. Four conditions must be satisfied before any compulsory powers can be used: there must be a mental disorder (as defined below); this must be of a nature or degree warranting medical treatment; treatment must be necessary for the health or safety of the patient

or the protection of others; and appropriate treatment must be available for the disorder.

"Mental disorder" is defined as "any disability or disorder of mind or brain which results in impairment or disturbance of mental functioning." In contrast to the current act, there are no specific exclusion criteria. The broad definition of mental disorder not only means that dangerous people with severe personality disorder are included, but it also raises the possibility of compulsory treatment for sexual deviancy and dependence on alcohol or drugs. The "treatability test," which has been used to exclude some patients with psychopathic disorder and mental impairment from treatment under the current act, is also conspicuous by its absence. The draft bill does not go as far as the white paper in advocating compulsory powers to manage behaviours arising from the disorder, but a broad definition of "medical treatment" probably includes treatments amounting to this.

For patients other than offenders, a new mental health tribunal will authorise compulsory treatment beyond 28 days. The bill clearly says that in the case of orders authorising medical treatment in hospital, the order must state whether hospital transfer and leave may only be granted with the agreement of the tribunal and whether the order may only be discharged by the tribunal. Restricting the remit of the "clinical supervisor" will impose restrictions on the patient.

The draft bill makes provision for treatment without consent. The explanatory notes state that although such treatment does breach the physical integrity, the government's view is that it can be justified under the European Convention on Human Rights Article 8(2) on the basis that the interference is in accordance with the law, is proportionate, and is in

BMJ 2002;325:2-3